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19 *Attorneys for Plaintiffs*

20 IN THE UNITED STATES DISTRICT COURT

21 FOR THE DISTRICT OF ARIZONA

22 NATHANIEL JOHNSON and KRISTEN
23 PETRILLI, ABRAHAM NIETO; GLORIA
24 and CHARLES LEWIS; FABIAN and
25 MARIE PATRON, on behalf of themselves
14 and all others similarly situated,

15 Plaintiffs,

16 vs.

17 KB HOME, a Delaware corporation;
18 COUNTRYWIDE FINANCIAL
19 CORPORATION, a Delaware corporation;
20 COUNTRYWIDE HOME LOANS, INC., a
21 New York corporation; COUNTRYWIDE
22 MORTGAGE VENTURES, LLC, a
23 Delaware company; COUNTRYWIDE-KB
24 HOME LOANS, an unincorporated
25 association of unknown form, LANDSAFE,
14 INC., a Delaware corporation; LANDSAFE
15 APPRAISAL SERVICES, INC., a California
16 corporation; and DOES 1 through 1000,

17 Defendants.

18 No. CV-09-972-PHX-FJM

19 **DECLARATION OF BRYCE
20 WARD, PH.D. IN SUPPORT OF
21 PLAINTIFFS' MOTION FOR
22 CLASS CERTIFICATION**

1 I, Bryce Ward, Ph.D., declare as follows:
2

3 1. I am a senior economist at ECONorthwest (ECONW), which provides
4 analysis in economics, finance, planning, and policy evaluation for businesses and
5 governments. I have also served as a Visiting Assistant Professor at Lewis and Clark
6 College and the University of Oregon, where I taught microeconomic theory, econo-
7 metrics, public economics, labor economics, and environmental economics. I have
8 testified on economic matters in administrative, legislative, and court proceedings, and I
9 have presented papers at professional proceedings on economics. I received a Ph.D. in
10 economics from Harvard University. I attach a copy of my *curriculum vitae* as Exhibit
11 A.
12

13 2. Throughout this declaration, I use “we,” and “our” to refer to my ECONW
14 colleagues¹ and me. In their work on this matter, my colleagues have worked under my
15 direction. I have also consulted with Dr. Ed Whitelaw, of ECONW.
16

17 3. As part of my consulting work at ECONW, I regularly perform empirical
18 economic analysis for clients in business and government using large databases.
19 Frequently I create these large databases by assembling data from a wide variety of
20 sources.
21

22 4. I have been informed by Plaintiffs’ counsel that the Defendants in
23 *Nathaniel Johnson, et al., vs. KB Home, et al.*, allegedly conducted or facilitated a
24 scheme that inflated appraisal values above market values for the properties at issue in
25 the proposed class. As described in the *First Amended Class Action Complaint* in this
26 case, the alleged “Inflated Appraisal Scheme” involved appraisals that: ignored relevant
27 data on housing markets; included “comparable” properties that were distant from subject
28 properties; included “comparable” properties that were sufficiently dissimilar from the
subject properties (e.g., single story compared to multiple story) that they should have
been excluded from the group of comparable properties; and, included “comparable

¹ Ed MacMullan and Paul Thoma.

1 sales" where the prospective buyer had abandoned the transaction and thus did not
 2 actually represent a property sale.²

3 5. I have been asked to determine the feasibility of using statistical analysis to
 4 assess the effects of the alleged "Inflated Appraisal Scheme" on the sales prices of the
 5 properties at issue in the proposed class (subject properties). In brief, this analysis will
 6 use data from the contemporaneous sales of properties comparable to the subject
 7 properties to calculate an expected sales price or market value for the subject properties.
 8 To the extent that the actual sale price of the subject properties exceeds the expected sales
 9 price derived from an analysis of the sale of comparable properties, this supports a
 10 conclusion that the alleged appraisal scheme inflated appraised values and sale prices of
 11 the subject properties above market values.

12 6. In determining the feasibility of performing such a statistical analysis I
 13 have reviewed information including:

- 14 • First Amended Class Action Complaint, No. CV 09-972-PHX-FJM
- 15 • Academic and industry literature on the statistical analysis of property
 16 valuation.
- 17 • Data and information from the Maricopa County Assessor's Office.
- 18 • Information from the Arizona Department of Revenue regarding statistical
 19 analyses of residential property values.

20 7. The literature on the statistical analysis of property valuation describes a
 21 well-established method that uses the sales price of houses with comparable structural
 22 and location characteristics to determine the expected sales price of the subject
 23 properties. Economists and appraisers refer to this type of statistical analysis using
 24 names such as hedonic analysis, multiple regression analysis, automated valuation
 25 models, mass appraisals, and computer assisted mass appraisals.³ I use the term, hedonic

26 ² *First Amended Class Action Complaint*, pp. 2-3.

27 ³ Waller, B. 1999. "The Impact of AVMs on the Appraisal Industry," *The Appraisal*
 28 *Journal*, July: 287-292; Arizona Department of Revenue. 2009. *Computer Assisted Mass*
Appraisal Systems – Residential Properties. Arizona Department of Revenue Publication
 546. May; Sirmans, G., D. Macpherson, and E. Zietz. 2005. "The Composition of

1 analysis throughout this affidavit. Hedonic analyses are based on the fact that the value
 2 of an individual property depends on the property's physical characteristics and location.
 3 A hedonic analysis describes the statistical relationship between a property's features and
 4 market value, and takes into account that physical and location characteristics differ
 5 among properties, but also that individual buyers value these characteristics differently.
 6 Hedonic analyses commonly use data on completed sales transactions that involve an
 7 exchange of money and property.⁴

8. Hedonic analysis is a widely used and accepted valuation method.
 9 Economists and appraisers have calculated property values using hedonic analysis for
 10 over thirty years, and this technique is currently used for this purpose throughout North
 11 America, Europe and elsewhere in the world.⁵ This technique has been subject to
 12 scientific peer review, including through publications of research in academic journals.
 13 During many years of research, application and peer review practitioners and researchers
 14 continue refining and improving the method.⁶ In 2003, the International Association of
 15 Assessing Officers published standards on the use of hedonic analyses:

16 This standard provides recommendations and guidelines on
 17 the design, preparation, interpretation, and use of automated
 18 valuation models (AVMs) for the appraisal of property....
 The principles addressed in this standard are considered

19 Hedonic Pricing Models," *Journal of Real Estate Literature*. Vol. 13, No. 1: 3-43;
 20 Moore, J.W. 2006. "Performance Comparison of Automated Valuation Models," *Journal*
 21 *of Property Tax Assessment & Administration*. Vol.3, Issue 1: 43-60; Calhoun, C. 2001.
 22 "Property Valuation Methods and Data in the United States," *Housing Finance*
 23 *International*. December 1; International Association of Assessing Officers. 2003.
 24 *Standard on Automated Valuation Models (AVMs)*. International Association of
 25 Assessing Officers, Chicago, IL.

26 ⁴ Colwell, P, J. Heller, and J. Trefzger. 2009. "Expert Testimony: Regression Analysis
 27 and Other Systematic Methodologies," *The Appraisal Journal*. Summer: 253-262;
 28 Malpezzi, S. 2002. *Hedonic Pricing Models: A Selective and Applied Review*. Prepared
 for: Housing Economics: Essays in Honor of Duncan MacLennan. Center for Urban Land
 Economics Research, The University of Wisconsin, Madison. April 10; Sirmans et al.,
 2005. Descriptions of hedonic studies of property values can be found in many economic
 textbooks including: O'Sullivan, A. 2007; *Urban Economics, Sixth Edition*. McGraw-Hill
 Irwin; McDonald, J. and D. McMillen. 2007; *Urban Economics and Real Estate Theory*
 and Policy. Blackwell; E. Gramlich. 1998; *A Guide To Benefit-Cost Analysis, Second*
Edition. Waveland Press, Inc.

29 ⁵ Malpezzi, 2002; Moore, 2006.

30 ⁶ Malpezzi, 2002; Sirmans et al., 2005.

applicable to all appraisals of real property, which are designed to estimate market value.

9. The fact that hedonic analyses have been used to value individual properties, as well as mass appraisals of properties on a community-wide basis, demonstrates the technique's acceptance within the valuation community, and its analytical flexibility and robustness.⁷ Hedonic analyses of property values have advantages over the comparative-sales method, which relies on a subjective assessment of a few comparable sales⁸:

The primary criticism of the comparative sales approach is that it is subjective, both in terms of selecting comparable sales and with regard to the types of adjustments that are made to determine value. In practice, the number of comparables is usually limited to three or four properties, and separate adjustments are made for specific property characteristics.^[19]

10. Hedonic methods that rely on statistical analyses of large databases of thousands or millions of property transactions can calculate expected market value more objectively, efficiently, and quickly than other methods, such as the comparable-sale approach.

11. I am also aware that the hedonic method has been used in other litigation regarding property values. For example, a recent article in *The Appraisal Journal*, notes that hedonic studies of property value have been used in property-value litigation as early as 1995, and that courts have accepted this method as scientifically valid for this type of application.¹⁰

12. A 2005 edition of *Journal of Real Estate Literature* contained an article that reviewed the results of 125 published studies of hedonic analyses of property value that

⁷ Malpezzi, 2002; International Association of Assessing Officers, 2003.

⁸ Waller, 1999; Shampton, J. 1996. "Statistical Evidence of Real Estate Valuation: Establishing Value Without Appraisers," Southern Illinois University Law Journal. Vol. 21: 113-148; Calhoun, 2001; International Association of Assessing Officers, 2003.

⁹ Calhoun, 2001, p. 14.

¹⁰ Colwell, et al., 2009.

1 were conducted during the previous ten years.¹¹ The authors of the article describe the
2 structural and location variables used in each of the 125 studies and identified the
3 variables most commonly used to calculate property value. The ten variables most
4 commonly used in these studies are:

- 5 • Age of Structure
- 6 • Square Feet of Structure
- 7 • Garage Space
- 8 • Fireplace
- 9 • Lot Size
- 10 • Number of Bathrooms
- 11 • Number of Bedrooms
- 12 • Full Bathroom
- 13 • Air-Conditioning
- 14 • Pool

15 13. These ten variables (and many others) are included in the database we have
16 assembled for this analysis. We collected data on all property and property transactions
17 within Maricopa County, Arizona, for 2002 through 2009 (I understand that the
18 Defendant's alleged actions occurred during these years).¹² The data from the Maricopa
19 County Assessor includes over 100 variables that describe structural characteristics of
20 homes and properties, as well as other location data, such as the subdivision or
21 neighborhood. Additional information about neighborhood characteristics is available
22 from other sources. The data available includes all of the major variables that recognized
23 experts in this field of study describe as important or relevant to the type of analysis we
will conduct.

24 14. My analysis will calculate property values using the same basic method as
25 that approved and employed by county assessors in Arizona. As described by the
26

27 ¹¹ Sirmans et al., 2005.

28 ¹² Maricopa County Assessor's Office, Residential Master File ST42030 and Secured
Master ST42060.

1 Arizona Department of Revenue (Department), all county assessors in the state conduct
2 mass appraisals of property values for residential properties using one of two methods:
3 replacement cost or hedonic analysis. The hedonic method is preferred and the
4 Department values the majority of single family homes and condominiums in Arizona
5 using the hedonic method.¹³

6 15. As described in the complaint, the defendant KB Homes built over 14,000
7 homes in Phoenix, Tucson, Las Vegas and Reno during 2006 through 2008.¹⁴ The
8 number of homes included in the alleged inflated-appraisal scheme has the potential to
9 affect our analysis of market values by biasing upward the values calculated for
10 comparable transactions. Our analysis will evaluate the potential extent of this bias and
11 attempt to minimize it as we develop our analytical models. For example, we may
12 exclude the original sales of KB Homes from the group of comparable transactions. We
13 note that the number of affected properties is small relative to the total number of
14 properties in the four urban areas listed above. In Phoenix, which includes a subset of the
15 14,000 KB Homes, our data set of properties in Maricopa County for years 2002 through
16 2009 includes over 800,000 properties. Also, to the extent that the group of comparable
17 transactions includes transactions affected by the inflated appraisal scheme, this will bias
18 our analysis in favor of minimizing the difference between values for the affected
19 property and the comparable group.

20 16. The data and hedonic analysis described in this declaration can reliably
21 provide results that address the valuation concerns at issue in this litigation. My analysis
22 will employ the same basic statistical approach used by county assessors in Arizona to
23 calculate the market value of subject and comparable properties. My analysis will then
24 compare the market value of subject properties to the market value of comparable
25 properties, and calculate the difference in value, if any. To the extent that the sale price
26 of the subject properties exceeds the sale price of comparable properties, this supports a

27 28 ¹³ Arizona Department of Revenue, 2009.

¹⁴ First Amended Class Action Complaint, p. 39.

1 conclusion that the alleged appraisal scheme inflated appraised values and sale prices of
2 the subject properties above market values.

3 Executed this 19th day of January, 2010, in Portland, Oregon.

4 By

5 BRYCE WARD, PH.D.

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CERTIFICATE OF SERVICE

I hereby certify that on January 19, 2010, I electronically transmitted the attached document to the Clerk's office using the CM/ECF System for filing and transmittal of a Notice of Electronic Filing to the following CM/ECF registrant(s):

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By s/ Steve W. Berman
Steve W. Berman

Appendix A

BRYCE WARD

Ph.D. Economics, Harvard University
B.A. Economics and History, University of Oregon

Bryce Ward joined ECONorthwest in 2005. His areas of expertise include econometric analysis and applied microeconomics -- including urban and regional economics, labor economics, public finance, and environmental and natural resource economics. Dr. Ward has applied his expertise to a variety of projects involving litigation support and program evaluation. His recent work includes evaluations of the efficacy of several education interventions and of the effects of land-use regulations on property markets.

Dr. Ward received his Ph.D. in economics from Harvard University and his B.A. in economics and history from the University of Oregon, and he has taught courses in labor economics, microeconomic theory, econometrics, public finance, environmental and natural resource economics, and social economics at Harvard University, Lewis and Clark College, and the University of Oregon.

Litigation Support Projects

Anti-Trust

- Analyzed the economic issues of class certification and damage calculations related to alleged antitrust violations in the market for residential lots
- Analyzed the market for MRI services in the Boise and Reno areas and assessed alleged anticompetitive behavior in this market

Environment

- Analyzed potential market responses to a natural disaster
- Calculated profit disgorgement based on emission violations
- Evaluated a contingent valuation study of a proposed wind farm
- Reviewed and evaluated the economic components of a feasibility study and preferred clean-up remedy for a contaminated site
- Evaluated the U.S. Environmental Protection Agency's draft report on groundwater and soil remediation scenarios for a creosote-contaminated Superfund site
- Assisted in an analysis of the fuel ethanol market to determine if refiners could have used ethanol to meet federal reformulated gasoline mandates instead of MTBE during the 1990s

Labor

- Evaluated a claim of discrimination in a employer discrimination lawsuit.

- Conducted analysis as a precursor to a public-interest arbitration involving transit districts
- Described the impact of economic turmoil and potential deflation on public interest arbitration
- Calculated lost wages resulting from wrongful termination of public school custodians
- Analyzed losses to a firm due to former employees' breaches of restrictive employment-contract covenants regarding future employment with a competitor

Personal Injury/Wrongful Death

- Calculated economic damages in a wrongful death lawsuit
- Calculated lost wages and presented expert testimony in a personal injury case

Other

- Calculated non-economic damages to a father denied access to his child for 17 years
- Calculated reimbursements to families who adopted foster children as part of a class action settlement
- Calculated damages suffered by an auto dealership and service department stemming from the violation of non-solicitation and non-compete clauses in an asset purchase agreement
- Evaluated the potential economic effects of the U.S. Department of Agriculture and California Department of Food and Agriculture's proposed eradication of the Light Brown Apple Moth
- Reviewed and conducted analyses in order to determine specialty forest product harvesters are compelled to sell to a shed the brush they picked under the permit that shed issued them
- Analyzed the impacts of Measure 37 (property rights limitation) on the State of Oregon
- Evaluated the feasibility of using a large electronic database to calculate harm to class members, and performed sample calculations, in a class action lawsuit regarding undisclosed changes in mortgage terms
- Addressed the economic issues of telecommunications firms' challenge, under the Telecommunications Act of 1996, to the City of Portland's franchise-fee agreements for use of the municipal right-of-way
- Assessed economic issues related to municipal right-of-way fees in New Orleans.

Other Analyses

Education

- Designed and implemented a randomized evaluation of the Safe and Civil Schools program with the Fresno Unified School District

- Developed a method for calculating and reporting student achievement growth for a school accountability program in Seattle, Washington
- Evaluated the effectiveness of the New School, a public-private partnership school in Seattle, Washington
- Reviewed literature on motivations for and effects of mergers between institutions of higher education
- Evaluated the effects of ASPIRE (a program to increased college enrollment among Oregon high school students)
- Reviewed and evaluated current research on using student test scores to assess school performance for Seattle Public Schools
- Developed a district report card system for several Oregon school districts
Described the Hispanic-White and Black-White achievement gaps in Oregon schools
- Reviewed and evaluated current research on the effectiveness of the Safe and Civil Schools program, and worked with clients to develop and implement additional program evaluation.

Public Policy

- Described the likely impact of a proposed tax increase on state taxable income and economic growth
- Evaluated the effect of enterprise zone tax incentives on economic development
- Developed a model and analyzed data to estimate gross revenues for video, voice, and data services at the city level for the League of Oregon Cities
- Reviewed and evaluated current research on the impact of increased hospital supply on local health care markets
- Provided data collection services to determine garbage and yard debris can weights and set-out rates for Eugene residents.

Real Estate

- Analyzed the effect of Seattle's Natural Drainage (low impact development) Projects on neighboring property values
- Analysis of the Effect of Regulations on Housing Prices in Greater Boston
Assisted Harvard Professor Edward L. Glaeser in preparing a report for Harvard's Rappaport Institute for Greater Boston and the Pioneer Public Policy Institute that estimated the effect of local regulations on housing supply and housing prices.
- Analysis of Neighborhood Price Dynamics
Assisted Harvard Professor Edward L. Glaeser on a paper detailing the sources of housing-price cycles at the neighborhood level.

Labor Markets

- Calculated potential economic costs associated with proposed change in Oregon's meal and rest break rule
- Analysis of the Long-Term Labor Market and Family Outcomes of Harvard Undergraduates Assisted Professors Claudia Goldin and Lawrence Katz of the Harvard Department of Economics in creating a large and valuable data set on Harvard College students that will help track labor market and family outcomes in the years following their entrance/graduation. This information will allow the examination of possible gender differences in career and family outcomes.

Publications

"The Causes and Consequences of Land Use Regulation: Evidence from Greater Boston" *Journal of Urban Economics* 65(3): 265-278 Glaeser, E., and B Ward.

"The Effect of Low Impact Development on Property Values" *Proceedings of the Water Environment Federation, Sustainability 2008* , pp. 318-323 Ward, B., E. MacMullen, and S. Reich.

"Myths and Realities of American Political Geography." *Journal of Economic Perspectives*. Glaeser, E., and B. Ward. Spring 2006.

Regulation and the Rise of Housing Prices in Greater Boston. Glaeser, E., J. Schuetz, and B. Ward. Cambridge, MA: Rappaport Institute for Greater Boston, Harvard University, and Pioneer Institute for Public Policy Research. 2006.

"Distance and Social Capital: Can Isolation Be Good?," in *Social Interactions and Economics*, Ph.D Dissertation, Harvard University, March 2006

"Does Reunion Attendance Affect Alumni Contributions?: Evidence from the Harvard College Classes of 1990-1999," in *Social Interactions and Economics*, Ph.D Dissertation, Harvard University, March 2006,

"Economic Bridges Falling Down." *Eugene Weekly*. Ward, B. and E. Whitelaw. October 8, 2008.

"The Economy: Now What? The Economists: Ward and Whitelaw" *Oregonian*, Ward B. and E. Whitelaw. September 20, 2008.

"Dream On." *Oregon Quarterly*. Ward, B. and E. Whitelaw. Winter 2007.

"Still the Land of Opportunity?" *Oregonian*. Tapogna, T., B. Ward, and E. Whitelaw. March 2006.

"The Price Is (Not) Right." Commonwealth: Growth and Development Extra. Glaeser, E., J. Schuetz, and B. Ward. January 2006.

Recent Speeches and Presentations

"Does Low-Impact Development Affect Property Values?: Evidence from Seattle's Natural Drainage System Projects." Water Environment Foundation Sustainability 2008 Conference., June 2008.

"Compensation for ROW Access Under the Telecommunications Act of 1996: Fiscal Issues Related to Communications Services." NATOA 27th Annual Conference. Sponsored by the

National Association of Telecommunications Officers and Advisors. Portland, Oregon. October 2007.

"Outside the Light: The real factors driving Eugene/Springfield's Economy." Eugene-Springfield Leadership Program. Sponsored by the Eugene Area Chamber of Commerce. Eugene, Oregon. October 2006.

"Deregulating the Housing Market." Preserving the American Dream Conference. Sponsored by the American Dream Coalition. Atlanta, Georgia. September 2006.

Teaching

Visiting Assistant Professor, Lewis and Clark College; Courses: Intermediate Microeconomic Theory, Econometrics, Public Economics, Environmental and Natural Resource Economics, Spring 2008 & Fall 2009.

Visiting Adjunct Instructor, University of Oregon; Courses: Labor Economics, Spring 2009.

Tutorial Leader, Harvard College; Courses: Everybody's Doin' It: Social Interactions and Economics, 2002-2006, Senior Thesis Tutorial: Labor, 2004-05.

Teaching Fellow, Harvard University; Courses: Intermediate Microeconomic Theory, Intermediate Macroeconomic Theory, Microeconomics: A Policy Tool for Educators, 2001-2003.

Teaching Assistant, University of Oregon; Courses: Principles of Microeconomics, Urban Economics, Economy of the Pacific Northwest, 1998-1999.